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ABSTRACT

This study investigates what thinking skills are needed to be a good artist or art student, particularly in a secondary school art course. Following a review of the literature, a qualitative approach was used to identify, describe, and classify the thought processes that are seen by the participants as being conducive to success in visual art. The principal methods of data gathering employed were participant observation, open-ended interviews, and examination of personal documents. The study addressed two related populations in a 2-stage model using what Sullivan and Hawke (1996) have described as the novice-expert paradigm. Stage 1 involved research with eminent practicing professional artists. Stage 2 involved research with art students in their final year of secondary school in Australia. Findings from the study are summarized and discussed. (Contains 3 tables and 11 references.) (BT)

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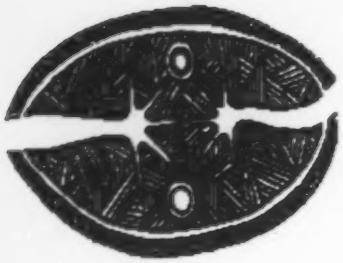

"Modes of Thought in Secondary School Art"

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Modes of Thought in Secondary School Art

Roger Boyd, Brisbane Grammar School, Brisbane, Australia

The Problem

With the volume and rate of change of knowledge today, education has come to be about developing independent learners with the skills necessary to cope with future learning rather than being about the imparting of facts and skills. Nowadays there is a requirement to teach thinking in all secondary school subjects, including Art. The question addressed in this research was, "What thinking skills are appropriate to teach in secondary school Art?"

Let me put the question in context by briefly looking at the thinking skills movement. Twenty years ago, according to Marzano (1993), the need for teaching thinking was recognised by only a few individuals and organisations. Today there are literally hundreds of thinking skills programs from which schools can choose. This confusing array of approaches to instruction in thinking has been described by Lewis & Smith (1993) as a "conceptual swamp". In an attempt to organise the field into a usable framework for schools, the American Association for Supervision and Curriculum Development (ASCD) has developed what they call *Dimensions of Learning*. The thinking skills central to the Dimensions of Learning framework are Compare and Contrast, Classification, Identifying and Applying Patterns, Inductive Reasoning, Deductive Reasoning, Justification, Analysing Perspectives, Analysis, Critical Analysis, Decision-Making, Problem-Solving, Invention, Investigation, Experimental Inquiry, Evaluation and Systems Analysis. This is a fairly typical list of thinking skills.

The question that occurred to me was, "What if I approached the problem from the other end?" What if, instead of taking a list of thinking skills from a thinking skills program and applying it to Art, I started with Art and asked, "What types of thinking are needed to be a good artist or Art student?" Would I come up with the Dimensions of Learning answer, or with a different one? The problem, then, is to find out what thinking skills are relevant to Art and in particular to a secondary school Art course.

Literature Review

I trawled through the literature and found plenty of theory and some research on specific thinking skills, but little research into the broader question of what thinking skills are appropriate to Art students. There have been a few studies that are particularly relevant.

The seminal study is Getzels & Csikszentmihalyi's (1976) longitudinal study using students from the Art Institute of Chicago. The researchers then returned to their subjects five years later to see which Art students went on to become successful artists. They aimed to discover what makes a person choose to become an artist, what makes one succeed, and how artists think. La Pierre (1992) interviewed ten artists to discover the professional artist's preferred style of thinking. Anderson (1995) did a phenomenographic study of artists' studios. Anderson interviewed eight artists who were living in urban lofts in Toronto.

Table 1 Thinking Skills of Artists Identified in Three Pertinent Studies

	Getzels & C (1976)	La Pierre (1992)	Anderson (1995)
Creativity, discovery orientation, valuing originality, disregard for social conventions, pushing the boundaries	✔	✔	✔
Life theme, identity defined as an artist, commitment, determination, perfectionism	✔	✔	✔
Visual thinking	✔	✔	
Synectic thinking (leaping & jumping, holistic thinking, spontaneity)		✔	
Logical thinking when necessary		✔	

Meta-cognitive awareness and control of own thinking, flexibility		✔	
Aesthetic sense (sensitivity to sensory perception at emotional and cognitive levels)	✔		
Sprituality		✔	
Product orientation		✔	

One source of theory about thinking skills in Art has been the Multiple Intelligences movement. According to this theory, the visual/spatial intelligence is primarily responsible for the domain of Visual Art. Gardner (1993, 1990), argues that the core capacities of spatial intelligence are to perceive, to transform and to recreate. Researchers at Project Zero in USA have concentrated on the aspects of perception, conception and production. Project Zero's concentration on perception, conception and production provides the beginnings of a framework for conceptualising the question of thinking skills in Art.

Design of the Study

Because of the lack of research to date on what thinking skills are appropriate to teach in secondary school Art, it was not possible to test a theory, but it was necessary to generate one. For this reason a qualitative approach was used in this study.

The purposes of the study were to identify, describe and classify the thought processes that are seen by the participants as being conducive to success in Visual Art. A descriptive-interpretive approach has been taken. The study sought understandings from the actor's own frame of reference. The outcome of such an approach, which seeks commonly agreed conceptions (or essences), is descriptive data arranged in a system of categorisation.

The principal methods of data gathering employed were participant observation, open-ended interviews and examination of personal documents. Interviews began with a very general question, which led to more specific concerns in the natural flow of the conversation through a process of "funnelling". This process allows participants to converse in terms of their own interests and knowledge and the researcher to follow pertinent leads within that context. The collected data were organised into categories which allowed held conceptions to emerge through the process of examining qualitative similarities and differences. This approach allowed the derivation of categories of thinking skills that were perceived by artists and students to be inherent in their own practice.

The study addressed two related populations in a two-stage model utilising what Sullivan & Hawke (1996) have described as the novice-expert paradigm. Stage one involved research with eminent practising professional artists. Stage two involved research with Art students in their final year of secondary school. The idea was to examine exemplary practice by experts in the field and compare it to student practice.

Before commencing interviews of artists for the study, a pilot study was conducted with one artist. The artist participating in the pilot study was John Ivanac, a painter. The following four artists, all of whom have national reputations in their fields, participated in the first stage of the study: Lyndall Milani, an installation artist; William Robinson, a painter; Shane Thompson, an architect; and Judy Watson, who is well known for her Aboriginal style paintings. In the second stage of the study, thirteen students (seven boys and six girls) participated. While the artists agreed to be named, the names of the students have been replaced with fictional ones to protect the privacy of the participants.

Computer assisted qualitative analysis was used as part of the process of analysing data. The software program NUD*IST (Non-numeric Unstructured Data Indexing Searching and Theorising) was employed. The program provided the management tools needed to transform the complex array of data into emerging categories. NUD*IST organises categories under a "tree structure" which builds according to the concepts developed. This structure is represented graphically. As concepts are refined and reorganised, the tree structure is altered in a process of removing branches of the tree and repositioning them in places that are more theoretically stable.

Considerable care has been exercised with issues of validity in this study. The process of analysing the data was one of arranging items from interviews, observations and found documents into categories of description and conception. As an analyst I attempted to ensure that the categories emerged from the data and were not imposed artificially by my own knowledge or prejudice.

A commonly used technique to establish internal reliability in qualitative research is triangulation. A diverse range of data has been used, including observational notes, transcripts of interviews of both principal

informants and other observers, photocopies of drawing and written work and photographs and inspections of artworks and studio spaces. Published books and articles on the artists were used as other interpretations of artists' work. Examination of the "outlier case" was another tactic used to confirm findings. Exceptional cases were examined and a search of the data was conducted for negative evidence of categories. Feedback was sought from artist respondents as a way of confirming findings. A draft of the analysis of data was circulated to all artists and their responses were used to further refine the analysis.

Summary of Findings

Table 2 Thinking Skills of Artists and Students

Modes of Thought	Micro-Skills of Artists	Micro-Skills of Students
Creative Thinking	Creative Thinking Behaviours Problem-Solving Problem-Finding	Creative Thinking Behaviours Problem-Solving Problem-Finding
Intuitive Thinking	Flow Leap Aesthetic Decision-Making	Flow Leap Aesthetic Decision-Making
Life Theme	Sensitivity to Experience Personal Expression	Self Expression
Metaphorising	Metaphor & Symbol in Artworks Synectic Thinking Synthesising Interpreting Figurative Meaning	Metaphor & Symbol in Artworks Comparison Synthesising Interpreting Figurative Meaning
Visual Thinking	Spatial Reasoning Visual Sensibility Graphic Ideation Discovering a Vision Transforming Visualising Media Investigation Visual Communication	Spatial Reasoning Visual Sensibility Graphic Ideation Discovering a Vision Transforming Visualising Media Investigation Visual Communication
Conceptualisation	Conceptualising Concept Formation Percept Formation	Concept Formation Investigation
Critical Thinking	Responding Decision-Making Analysis	Responding Decision-Making Analysis Justification
Reflective Thinking	Aware of own Thinking Evaluating Effectiveness of Actions Planning & Organisation of Time Organisation of Materials and Workspace Collaboration & Concentration	Aware of own Thinking Evaluating Effectiveness of Actions Seeking and Responding Appropriately to Feedback Planning & Organisation of Time Organisation of Materials and Workspace Avoiding Distractions

Discussion

In the space left, I'll give you a quick look at some of the more interesting aspects of what the artists and students said and the thinking skills they used.

Creative Thinking

Problem-Finding. Getzels & Csikszentmihalyi (1976) discovered that the single most reliable predictor of success as an artist was a thinking skill that they called "problem-finding". A distinction was drawn between the traditional view of reasoning, which is directed towards problem-solving where the problem is known or given and a solution is needed; and problem-finding, where no problem exists until the creative person invents one. All of the artists studied were seen to be very efficient problem-finders with high discovery orientations. (A "discovery orientation" is a propensity to consider several possibilities before deciding on a course of action.) One artist used a term, "fecund mind", which encapsulates a way of thinking that involves seeing many possibilities, making many connections, and having a mind which is constantly thinking about the task. Another artist said, "I've got too many ideas." Artists have conscious and efficient tactics for problem-finding. These include the keeping of sketchbooks and other types of journals, collecting, brain-storming and conducting research. Evidence of problem-finding by students was found in the process work

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of the students and also in interviews. Problem-finding by students was found to be assisted by conducting research, keeping visual diaries and drawing.

Intuitive Thinking

Intuition is the ability to instantly recognise or know something without having to reason it out.
The artists interviewed made sufficient mention of intuitive thinking as a way of thinking to warrant its classification as a mode of thought in its own right. Thompson said he cannot explain the process of creation, which is a mystery. "There's this unconscious incredibly complex thing which goes on." Robinson said the process of painting is not a calculation, and the way he makes judgements is "mainly by intuition." Milani said the process is one of lateral thinking that would seem to an academic to lack validity.

Flow. Subjects in Csikszentmihalyi & Robinson's (1990) research reported an experience that the researchers have called a *flow experience* or *autotelic experience*. This is a pleasurable trance-like state of deep concentration reported by many people engaged in activities as diverse as painting a picture and mountain climbing. Its chief characteristics are: attention is focused on the activity, awareness of the passage of time is lost, there is a feeling of detachment and a loss of self-consciousness, a heightened alertness allows the full exercise of powers, there is a sense of personal expansion and wholeness and intrinsic satisfaction leads the person to wish to repeat the experience.

I found corroboration for the existence of the flow state. All the artists reported experiencing a trance state. Milani spoke of a "trance altered state", Robinson of a "feeling of nothingness", Watson of a "state of euphoria" and Thompson of being "almost conscious". They described the state as a cerebral one of intense concentration involving synthesis or "focussing like a camera". They referred to shutting out distractions with music or solitude and also said that they became unaware of distractions such as bodily discomforts, while "time seems to stand still". The experience was "both uncomfortable and exhilarating".

Some students reported an experience similar to the flow experience enjoyed by artists. Important considerations to emerge were the need for concentration, which seems to be the defining characteristic of flow, the absence of distractions, and the optimum time. Three students mentioned two hours as the optimum time, and Robinson also mentioned two hours.

Leap. The conditions that McKim (1980) sees as likely to result in the intuitive leap or flash of insight are preparation, incubation and a defocused state of consciousness. Preparation involves adequate knowledge, research, motivation and consideration. Incubation means letting the problem stew in the brain's sub-conscious for long enough. When the thinker leaves the problem alone and relaxes, it may continue to work itself out in the sub-conscious. Intuitive leaps tend to come, not when one is thinking logically in sequential steps with a fully aware and focused mind, but when one is relaxed, or even asleep.

The evidence suggests the artists sometimes go through all three stages of the leaping process. Sometimes that leap happens in a moment of relaxation and defocused state of consciousness and sometimes it happens in a moment of intense concentration. Evidence relating to leap was found in the data from six of the thirteen students. Kerry employed the three stages of the leap process. She conducted research for her installation by looking through magazines and books. This was the preparation stage. She explained how at some times a problem was constantly present in her mind. This was the incubation stage. The inspiration came later, not when she first saw the books. "You can't sit down and say, now I'm going to get an idea; it just happens spontaneously." When do the ideas come to her? "Usually [when] talking to people about other things." In other words, when relaxed and not focused on the problem.

Aesthetic Decision-Making. This was not predicted by the literature, but certainly emerged strongly from data on artists. It can be described as intuitive decision-making and problem-solving guided by a personal aesthetic. It involves the making of many small decisions in a semi-automatic or intuitive way. A particular variation of it is colour thinking - a way of thinking exhibited by some artists and students with a heightened awareness of colour.

> Nora: With the rocks I used a lot of impasto gel to build them up a lot. I started on that, put all the impasto gel and then the colour that I was using for that particular rock. I did all the purple rocks first and then red or something, red or yellow next. But, I went by the colours of each one. And once I'd done that I did a bit of sea on the little one. Actually the sea changed colour a lot. Getting the colour I wanted. At one stage I had it a pale watery green and then it went to almost black because it was so dark. The final colour I liked was a blue colour and varying shade as it got closer to the land. I finished the colour of the rocks on the small painting, then I went to the big one and started doing the colours there. The mountains in the big painting varied in colour a lot. I had them a very pale green. I didn't know what colour I was going to do them. In the end I decided not to do them snow covered. I tried using all the colours I'd used in the rocks. I tried mixing them all together - the purple, the yellow, the green

and it made a sort of brown colour. I added bits of white to vary the shape. That sort of didn't fit very well with the browns. I tried various colours until I got - used the same purple that I had in the rocks, except I mixed a lot of white in it to make a very pale colour. And a cool blue as well. I mixed that with the purple at times. So those two colours and added white - eventually I found the blue and the purple which I liked.

Life Theme

A finding of Getzels & Csikszentmihalyi (1976) was the importance of a "life theme". Interviews by those researchers suggested that artists felt they must be sensitive to experience and transform their personal experiences into visual images that have universal significance. Artists remembered high school Art as a chance to "establish a sense of one's self, to take a stance toward life" - to help them make sense of the world.

There was evidence from the interviews of artists that artists' themes do indeed come from their own life experiences and further, that the act of giving expression to those experiences through their art helps them to make sense of life and the world and to define themselves. Because of their youth, secondary school students do not have the same length of experience as artists, while their characters are still in the process of being formed. Is it possible, then, for students' themes to come from their own limited life experiences? Data suggest that students draw inspiration both from secondary sources and from their own experience.

Students' themes tend to come from images they have seen, often in books or magazines; ideas they have encountered, sometimes in their study of Art or other subjects; the mass media and popular culture. Students often distrust their own experience as a source of ideas, thinking that their experience is too limited or mundane or embarrassing to be of interest to others. Some students have a lack of understanding of the validity of personal experience as an art theme and think that Art should be accessible to the public.

On the other hand, several students did draw inspiration from their own experience and some found the process of exploring personal themes in Art therapeutic and cathartic. Mary made an installation of someone – represented in a lino-print on the floor – being crushed by a hail of blocks of wood. She agreed that maybe it was her "being crushed." Kerry explored and resolved her own personal and psychological problems associated with growing up and coping with the pressure of her Senior year. When asked why she had used a theme of escape, Kerry replied: "My own frustration of being stuck in the middle of grade 12. I don't know, I sort of went through a period when I was feeling that I needed to escape, I was feeling enclosed. So it was a reflection of myself."

Chad also dealt with the theme of the school's impact on the individual. Chad and Ben are both of Asian extraction and both dealt in their art with the connection of Asian and Australian cultures. Fred used his experience of working in a tavern kitchen in his architectural design. George designed a skating rink because of his own interest in skating.

Some students enjoy Art because of the opportunity it gives for self-expression. Harry enjoys creating Art and finds the process cathartic. He is able to work out his anger and feel happier.

Visual Thinking

Heightened Visual Aesthetic Sensibility. Because artists are attuned to looking for certain aesthetically pleasing images in their environment, they notice things that may not be obvious to others. A related skill is close observation – the propensity to be an acute observer by looking closely at things.

Discovering a Vision. Some students were found to embark on a process of production with a clear vision in their mind or plan on paper, while others began with a more general idea, but all made changes in the process of discovering the vision, which was rarely exactly what they expected.

Media Investigation. Some students set out with no clear idea of their intention and experimented through a process of media investigation. This method of working involves a direct engagement with and responding to materials such as paint, found objects or modelling materials in a search for an aesthetic solution.

Graphic Ideation. Using drawing as a thinking tool, students and artists develop ideas visually. This type of drawing is quick, sketchy and unresolved (McKim, 1980). It can include writing, collage and the use of computer graphics.

Visual Communication. Visual communication is the ability to express or communicate ideas through Art. It requires skills in the media employed, especially drawing.

Critical Thinking

Responding. Perkins (1994) and Csikszentmihalyi & Robinson (1990) give advice on how to observe a work of art. Artists and students reported approaches very similar to those recommended by these authors.

Table 3 Responding to Artworks

Artists	Students
1. Seduction 2. Analysis 3. Seeking background information 4. Communication with the artist or context 5. Transcendental communication	1. Orientation 2. Intuitive selection 3 .Looking closely 4. Analysis 5. Seeking background information 6. Interpretation, empathy, communication with the artist

Andrew illustrates the first five steps and Fred explains step 6:

> *Andrew:* First of all when I'm in the gallery situation I glance around to try to find a work which has something and look at it. The first decision is which work in the row to look at. It's terrible really because there's so much to look at usually, it becomes a process of finding what's the best for you - what works. ... But when I find a work I might spend a long time with it. For me it's a matter of getting to know the image. Stuff as basic is composition and looking at where the things are and the process - how it's painted, what it's painted with, what the colours are like. The little card underneath is always interesting. It might tell you about the time and the history of the work that's around
>
> *Fred:* I respond by thinking if I'd drawn that what would I be thinking, what would I be meaning by doing it? Try to understand the feelings of the artist while he was painting it, what sort of ideas he's trying to put forward in his piece. Because I think art's a big sort of language.

Educational Implications, Limitations of the study & Further Research.

Although qualitative research cannot be used to generalise on a larger population, this study has produced insights on the way artists and students think, which open opportunities for further educational enquiry and curriculum development. Further research is needed to test the generalisability of the theory tentatively formulated by this study. This could take the forms of duplicating studies with different student participants, to ascertain whether the same or similar thinking skills are being employed and of action research to test whether teaching the thinking skills found in this study enhances learning in expected ways.

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